What is claimed is:

1. An image display device comprising:

a face substrate which forms anodes and phosphors on an inner surface thereof:

a back substrate which forms a plurality of cathode lines which extend in one direction and are arranged in parallel in another direction which intersects one direction, include electron sources, control electrodes which are arranged to face the cathode lines in a non-contact manner and include a plurality of electron passing holes which allow electrons emitted from the electron sources to pass therethrough to an inner surface side of the face substrate in regions which respectively face the electron sources and control an emission quantity of electrons emitted from the electron sources, and acceleration electrodes which face the control electrodes in a non-contact manner, include a plurality of electron passing holes which allow the electrons which pass through the electron passing holes formed in the control electrodes to pass therethrough in regions which respectively face the respective electron passing holes formed in the control electrodes and accelerate the electrons which pass through the electron passing holes on an inner surface thereof, and face the face substrate with a given distance therebetween; and

a frame body which is inserted between the face substrate and the back substrate while surrounding a display region and

holds a given distance between the face substrate and the back substrate, wherein

assuming a distance between the electron sources and the control electrodes as Lkg, a distance between the control electrodes and the acceleration electrodes as L12, a thickness of the electron passing holes formed in the control electrodes as Tg1 and a short diameter of the electron passing holes formed in the control electrodes as FG1, the acceleration electrodes satisfy the relationship $(Lkg + Tg1 + L12/2)/FG1 \geq 0.25$,

assuming a thickness of the electron passing holes formed in the acceleration electrodes as Tg2 and a short diameter of the electron passing holes of the acceleration electrodes as FG2, the acceleration electrodes satisfy the relationship $Tg2min \leq Tg2 \leq Tg2max$ and the relationship $Tg2min = 2.98FG2 - 0.04$,

assuming $FG2 < 0.109$, the acceleration electrodes satisfy the relationship $Tg2max = 0.02/(0.115 - FG2) - 0.06$, and

assuming $FG2 \geq 0.109$, the acceleration electrodes satisfy the relationship $Tg2max = 0.03/(FG2 - 0.1) + 0.045$.

2. An image display device comprising:

a face substrate which forms anodes and phosphors on an inner surface thereof:

a back substrate which forms a plurality of cathode lines which extend in one direction and are arranged in parallel in

another direction which intersects one direction and include electron sources, control electrodes which are arranged to face the cathode lines in a non-contact manner, include a plurality of electron passing holes which allow electrons emitted from the electron sources to pass therethrough to an inner surface side of the face substrate in regions which respectively face the electron sources and control an emission quantity of electrons emitted from the electron sources, and acceleration electrodes which face the control electrodes in a non-contact manner, include a plurality of electron passing holes which allow the electrons which pass through the electron passing holes formed in the control electrodes to pass therethrough in regions which respectively face the respective electron passing holes formed in the control electrodes, the electron passing holes being formed while having an N-stage structure in which an open hole diameter thereof is gradually increased in the direction toward the face substrate, and accelerate the electrons which pass through the electron passing holes toward the inner surface side of the face substrate on an inner surface thereof, and face the face substrate with a given distance therebetween; and

a frame body which is inserted between the face substrate and the back substrate while surrounding a display region and holds a given distance between the face substrate and the back substrate, wherein

assuming a distance between the electron sources and the control electrodes as Lkg, a distance between the control electrodes and the acceleration electrodes as L12, a thickness of the electron passing holes formed in the control electrodes as Tg1 and a short diameter of the electron passing holes formed in the control electrodes as FG1, the acceleration electrodes satisfy the relationship $(Lkg + Tg1 + L12/2)/FG1 \geq 0.25$,

assuming a thickness of a first-stage open hole of the electron passing hole of the acceleration electrode as Tg2-1, a thickness of open holes ranging from the first-stage open hole to a Nth-stage open hole of the electron passing hole of the acceleration electrode as Tg2-N, a short diameter of the first-stage open hole of the electron passing hole of the acceleration electrode as FG2-1, a short diameter of the Nth-stage open hole of the electron passing hole of the acceleration electrode as FG2-N, a minimum value of a thickness of open holes ranging from the first-stage open hole to the Nth-stage open hole as Tg2min-N, and a maximum value of a thickness of open holes ranging from the first-stage open hole to the Nth-stage open hole as Tg2max-N, the acceleration electrodes satisfy the relationship $FG2-1 < FG2-2 < \ldots < FG2-N$,

wherein with respect to at least one Tg2-N, the relationship $Tg2-N \geq Tg2min-N$ is satisfied, and with respect to all Tg2-N, the relationship $Tg2-N \leq Tg2max-N$ is satisfied.

3. An image display device according to claim 1, wherein the electron sources are made of carbon nanotubes.

4. An image display device comprising:

a face substrate which forms anodes and phosphors on an inner surface thereof:

a back substrate which forms cathodes which form electron sources on a display region, control electrodes which are arranged to face the cathodes in a non-contact manner, include a plurality of electron passing holes which allow electrons emitted from the electron sources to pass therethrough to an inner surface side of the face substrate in regions which respectively face the electron sources and control an emission quantity of electrons emitted from the electron sources, and acceleration electrodes which face the control electrodes in a non-contact manner, include a plurality of electron passing holes which allow the electrons which pass through the electron passing holes formed in the control electrodes in regions which respectively face the respective electron passing holes formed in the control electrodes and accelerate the electrons which pass through the electron passing holes toward the inner surface side of the face substrate on an inner surface thereof, and face the face substrate with a given distance therebetween; and

a frame body which is inserted between the face substrate and the back substrate while surrounding a display region and

holds a given distance between the face substrate and the back substrate, wherein

assuming a distance between the electron sources and the control electrodes as Lkg, a distance between the control electrodes and the acceleration electrodes as L12, a thickness of the electron passing holes formed in the control electrodes as Tgl and a short diameter of the electron passing holes formed in the control electrodes as FGl, the acceleration electrodes satisfy the relationship $(Lkg + Tgl + L12/2)/FGl \geq 0.25$,

assuming a thickness of the electron passing holes formed in the control electrodes as Tg2 and a short diameter of the electron passing holes of the acceleration electrodes as FG2, the acceleration electrodes satisfy the relationship $Tg2min \leq Tg2 \leq Tg2max$ and the relationship $Tg2min = 2.98FG2 - 0.04$,

assuming $FG2 < 0.109$, the acceleration electrodes satisfy the relationship $Tg2max = 0.02/(0.115 - FG2) - 0.06$, and

assuming $FG2 \geq 0.109$, the acceleration electrodes satisfy the relationship $Tg2max = 0.03/(FG2 - 0.1) + 0.045$, and

matrix driving is performed using the control electrodes and the acceleration electrodes.

5. An image display device according to claim 4, wherein the electron sources are made of carbon nanotubes.

6. An image display device according to claim 1, wherein

the control electrodes and the acceleration electrodes adopt the laminated film electrode structure in which the control electrodes are formed of a first conductive metal film and the acceleration electrodes are formed of a second conductive metal film.

7. An image display device according to claim 1, wherein the control electrodes and the acceleration electrodes adopt the laminated electrode structure in which the control electrodes are formed on the cathode line side of the insulation substrate using a first conductive metal film and the acceleration electrodes are formed on the anode side of the insulation substrate using a second conductive metal film.

8. An image display device according to claim 1, wherein the control electrodes and the acceleration electrodes adopt the laminated electrode structure in which the control electrodes are formed on the cathode line side of the insulation substrate using a strip-like electrode element and the acceleration electrodes are formed on the anode side of the insulation substrate using a conductive metal film.